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ONE HUNDRED YEARS

IN

PUBLIC HEALTH IN INDIANA

BY

DR. W. F. KING

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ONE HUNDRED YEARS IN PUBLIC HEALTH IN INDIANA

BY DR. W. F. KING

This paper was originally read before the ninth annual session of the Indiana Sanitary and Water Supply Association in February, 1916, as a contribution to the Centennial program of that Association. The historical facts of the paper, so far as they pertain to the earlier years of the last century, have been gathered from the files of the *Western Sun*, published at Vincennes, in the period from 1808 to 1820, and of the *Indiana Republican* and *Madison Courier*, published at Madison from 1824 to 1850. Incomplete files of these earliest newspapers of the State are preserved in the State Library. Constituting as they do the earliest and most accurate record of events as they transpired within the State, these newspaper files should be considered one of the priceless possessions of the State to be preserved to future generations. Many of the events of a later period as noted in the paper have been gathered from the published annual Transactions of the Indiana State Medical Society, which cover the period from 1849 to 1907. So far as known, there is but one complete set of these transactions, that on file in the Indianapolis City Library. The bringing together of this complete series represents several years of patient effort on the part of Dr. Luther D. Waterman, of Indianapolis, who in the late years of his life set himself the task of collecting and preserving this most interesting and valuable record of the medical history of the State. Dr. Waterman related to the writer how, when he had finally secured a copy of each annual publication but one

and had almost despaired of being able to find the missing number, he was given a clue that led to the library of one of the early physicians of Louisville, and from there to the home of a granddaughter of this physician far up in the mountainous backwoods of Kentucky, where he was rewarded by securing a copy of the coveted number.

The subject of this paper is in reality a misnomer, since there has not been in Indiana a century of progress in public health administration. Public health is synonymous with preventive medicine, and preventive medicine had its real beginning with the discoveries of Pasteur, whose active life period was from 1860 to 1890. Pasteur proved that so-called contagious diseases were due to germs, mostly minute vegetable organisms, and he said, "It is within the power of man to drive all contagious and infectious diseases from the earth." Upon the demonstration and acceptance of this truth is based preventive medicine and public health as we know it today. A knowledge of germs and the germ cause of disease was denied the early settlers of Indiana, who, in addition to their task of subduing nature and hewing out a civilization, were compelled to fight against the ravages of cholera, smallpox, ague, typhoid, consumption, and many other mysterious disease forms, including that strange medical vagary known as "milk sick." The theories advanced and beliefs held as to the origin of and reasons for disease were many, varied and interesting. One firmly rooted and widespread belief which even yet is not wholly eradicated from the Hoosier mind, was that disease was sent by an offended Deity as punishment for sins. Another belief was in the "miasm," an invisible and indefinable something that arose from damp soil and from swamps, especially at night. A considerable remnant of this belief still persists among us in our ignorant fear of night air. Another belief was that the so-called diseases of child-

hood—measles, whooping cough, diphtheria, etc.—were both inevitable and immutable, and to attempt to escape them would be to fly in the face of Providence. Hence when the weather was considered seasonable and the blood of the possible victim was thought to be in good condition, children were deliberately exposed to these diseases.¹ Even this belief is frequently encountered in parents and occasionally in physicians in Indiana today.

The first white settlement in what is now Indiana was at Vincennes. In the issue of the *Western Sun*, published at Vincennes, of August 20, 1808, is to be found the first summons to community effort in behalf of public health, and doubtless the first newspaper protest against the indolence and inefficiency of "chair warming" town officials. In a vigorous editorial the *Sun* asserts that the cause of the ague and fever and bilious complaints affecting the town is to be found in the putrefaction of grass growing in the river opposite the village. The editor says: "A few hours' labor of the people of the town would remove the nuisance, and yet from the time the place has been inhabited, not a solitary exertion has been made to remove a sprig of the grass. Who and where are the trustees of the town? What are they doing and what is their duty? Is not the preservation of the health of the

¹It is not strange that these beliefs persisted when leading authorities failed for a long time to agree as to the contagiousness of disease. Dr. Oliver Wendell Holmes read a paper in 1843 on the contagiousness of puerperal fever. The essence of this paper was that "The disease known as puerperal fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses." Professor Hugh Lenox Hodge, of the University of Pennsylvania, in 1852, in a discussion of this statement made by Dr. Holmes, took a distinctly opposite view. He says: "The result of the whole discussion will, I trust, divest your minds of the overpowering dread that you can ever convey, in any possible manner, a horrible virus so destructive in its effects and so mysterious in its operation as that attributed to puerperal fever." Professor Charles D. Meigs, of Jefferson Medical College, in the same year, 1852, published the following in reference to causes of puerperal fever: "I prefer to attribute them to accident, or Providence, of which I can form a conception, rather than to a contagion of which I cannot form any clear idea, at least as to this particular malady."

town an important branch of it? And is it not well recollected that the town was incorporated with a view expressly to that object? Will the people incur the risk of a four or five weeks' illness rather than employ a few hours in removing the cause that will inevitably produce it? If they will, they really deserve the curses of Heaven in every shape in which they can be inflicted."

In the same paper, under date of September 3, 1808, the editor says: "It is also not uncommon to see carcasses of horses, dogs, hogs, etc., lying in the streets and on the common near the village. This is not only highly offensive, but very injurious to the health of the inhabitants. As to cleanliness, the village is no better than an Indian camp. It is not recollected that the trustees of the town have taken any measures to remedy the above abuses, or if they have they have not been carried into effect." For an editor who found it necessary to accept pork and flax on subscription, and at a time when the gentle art of dueling was still in vogue, the above exhibits a degree of editorial courage and zeal for the cause of public health scarcely attained by the modern press.

The first Health Ordinance in Indiana was passed by the trustees of the borough of Vincennes, March 19, 1819, three years after the admission of Indiana as a State. This ordinance was in reality a blanket ordinance, covering a variety of nuisances against the public comfort and welfare. According to Section 1, a fine of five dollars was imposed on any person who cast any garbage or other offensive matter on any of the streets within the borough or so near thereto as to annoy the inhabitants in the neighborhood thereof. Section 2 provided that it "shall be the duty of the town constable to remove or cause to be removed all nuisances from the streets, and his further duty to give such person and persons as caused the nuisance, notice thereof and demand of him, her or them a

reasonable compensation for the time, trouble and expense of having removed the same, and if he, she or they neglect or refuse to pay the said constable as herein required, he shall immediately proceed to recover the same before any justice of the peace within this borough, together with the fine imposed by the first section." The town constable, therefore, became the first health officer and sanitarian in Indiana. The constable health officer of Vincennes doubtless soon found himself a busy official, for in the summer of the following year, 1820, an epidemic of yellow fever occurred that for a time almost depopulated the town and imposed a serious check upon its growth.

The first Health Ordinance in the town of Madison was passed August 6, 1824, and apparently had to do with the duties of the town marshal in keeping the streets and alleys free of waste and rubbish. A copy of this ordinance has not been found, but reference is made to it in a supplemental ordinance passed July 10, 1832, at a time when Asiatic cholera was spreading rapidly over the Eastern and Central States and bidding fair to reach Madison, which it did in October of the same year. By the terms of this supplemental ordinance the town was divided into two districts, separated by Mulberry creek. Hugh Gibson was appointed health commissioner of the first district and Charles Woodard of the second. These commissioners were "required to make personal inspection, once in two weeks until the 15th of November, of the premises of each individual and all streets, lanes and alleys, and cause the ordinance to prevent and remove nuisances to be carried into full effect." (The ordinance here referred to is that of August 6, 1824.) The sanitary inspection provision of this ordinance is far in advance of that in force in most towns and many cities of today and doubtless was scrupulously enforced, for cholera was knocking at the gates of Madison and her

citizens were more than willing to let the "health crank" have his way. In spite of the ordinance cholera came. The first death occurred October 23, 1832, and up to noon of November 1 there were forty-one cases with nineteen deaths.

The first Board of Health in Madison, and probably the first in the State, was appointed on the 25th of October, 1832, following the outbreak of cholera on the 23d. The board consisted of Messrs. Jeremiah Sullivan, John Pugh and Andrew Collins. The duty of the board was to meet daily at 1 p. m. to receive the reports of physicians. Thus we have not only the first official health board but the first official collection of vital statistics within the State.

The town of Madison passed another supplemental ordinance October 22, 1832, requiring all tenants and householders to keep the gutters in front of their premises clean, and to remove all filth that accumulated in front of their buildings, under penalty of not less than \$1 fine and the costs of suit.

In the *Indiana Republican*, published at Madison in 1832, in a discussion of cholera, which was then prevalent, the following causes are considered:

1. From malaria and bad air.
2. Exhalations from the bowels of the earth.
3. Insensible changes in the air.
4. The comet now approaching the globe.
5. Contagion from man to man.
6. Invisible insects flying in the air.

The epidemic of cholera that affected Madison in 1832, prevailed in practically every town in the State, with a death loss that must have been enormous. Governor Noah Noble, by proclamation under date of October 18, 1832, set apart the second Monday of November as a day "for fasting and prayer to an over-ruling Providence, beseeching Him to arrest the progress of the disease, with its train of calamities, and in

behalf of the churches he bespeaks the aid and influence of all who believe in the efficacy of prayer." Notwithstanding health boards, sanitary ordinances, prayer and fasting, the ravages of cholera continued through the summers of 1833 and 1834, and extended to the remotest boundaries of the State, ceasing only when the greater part of the population had either succumbed or been rendered immune by an attack of the disease.

An interesting reference to what was probably the first epidemic in Indianapolis is found in Historical Notes written by Dr. S. G. Mitchell and published in the *Indianapolis Gazette* of March 6, 1822. Under the head of intermittent and remittent fevers he says: "Out of one thousand souls in town on the donation and the farms surrounding the town, at least nine hundred sickened during the prevailing epidemic." This epidemic seems to have extended from about July 10 to the last of October, 1821, in which time twenty-five deaths occurred. This death rate applied to the present population of Indianapolis would mean a total of at least seven thousand five hundred deaths. In commenting on the natural conditions of the village at that time, the writer continues: "The dryness of the soil; the height of the ground above the bed of the river; the purity and quantity of water which every citizen obtains by digging wells from twenty to thirty feet, induces us with other reasons to expect that we may yet have a healthy town." This expectation, expressed almost a hundred years ago, has not yet been fully realized.

We must admit that even before Pasteur's discoveries, some progress had been made in the prevention of diseases caused by germs, even though the germ cause was not recognized. Sir Edward Jenner's discovery of vaccination as a preventive of smallpox was published in 1798 in England. Knowledge of this discovery had reached the United States at the be-

ginning of the Nineteenth Century, and from that time small-pox ceased to be the dread scourge wherever vaccination was practiced. Undoubtedly the first native of what is now Indiana to be vaccinated was Little Turtle, the famous Miami Indian chief. It is related that "while on a visit to Washington he learned of vaccination and at once had himself and the members of his party inoculated and carried the preventive to his people." This was prior to the organization of Indiana as a State, since the death of Little Turtle occurred in 1812. A splendid example of good citizenship in an untutored savage, that might well be emulated by the modern tribe of anti-vaccinationists with safety and profit alike to themselves and the State.

In an editorial in the *Republic and Banner* of Madison, under date of June 28, 1834, appeared a list of "General Maxims for Health copied from a page of Sears' New Family Recipe Book." The following are deserving special notice and are just as true and worthy of acceptance today: "Rise early. Eat simple food. Take plenty of exercise. Eat what best agrees with your system and resolutely abstain from what hurts you, however well you may like it. Have nothing at all to do with quacks and do not tamper with quack medicines. Let those who love to be invalids drink strong green tea, eat pickles, preserves and hot biscuits. Have your bed chamber well aired and have fresh bed linen every week. It is not healthy to sleep in heated rooms."

An agitation for a permanent board of health is seen in an editorial in the *Republican and Banner* of Madison, June 12, 1834. The editorial fell on deaf ears, for in the next issue, June 19, 1834, the editor pays his compliments to the citizens of Madison in the following vigorous language: "The suggestion respecting the proposition of establishing a board of health for the town of Madison made by us last week, as far

as we are acquainted, produced no movement in the minds of Madison folks. This shows that they are not easily moved. Quite stiff. But it is our duty to make one more move on this subject, and we do it in order that our skirts may be clear. Madison ought to have a board of health, whether conscious of it or not."

There was a board of health in Bloomington as early as August, 1833. A report from this board, signed by C. P. Hester as secretary and published in the *Madison Republican and Banner* for August 29, 1833, shows that cholera appeared in Bloomington, August 10, of that year. Among its first victims was a student of the college and the college was closed until October 1. The first board of health in Fort Wayne was established in 1842, with Dr. John Evans, Dr. W. H. Brooks and Dr. B. Sevenick as members. The first health board in Indianapolis was established in 1850. The historian records that "there was so much ill feeling among the members that they did no good until 1854, when Dr. Jameson became a member and managed to put the concern in working order."

The intimate relation of a wholesome water supply to public health is now well known. In the early history of the State but little consideration was given to water supply except from the standpoint of convenience.

In Madison, previous to 1816, there were several public wells in use, the main one being in front of the courthouse where two gentlemen, named Thomas and Kirk, were hired to draw water by a windlass, and children were sent to them to procure the family water supply. The furnishers of the motive power were paid by the water consumers according to the amount of water each consumer used. There is an account of a construction in Madison, in 1816, which is believed to be the first public waterworks in the State of Indiana. An immense number of logs were cut and a Mr. Allison had the

contract for boring holes in them. They were fitted together and laid as a water main, the supply being taken from a spring on the hills. There were three plugs for public use at different street crossings, constructed of hollow posts standing upright, with holes bored in the side stopped with wooden plugs. When a person wanted a bucket of water he pulled out the plug, let the bucket run full and then plugged up the hole again. This old log system was long in use. Finally, however, men engaged in hauling water with carts, in order to create a greater demand for hauled water and possibly to build up a monopoly, dug down to the logs at the foot and chopped holes in them. Thus ended the first public water supply in this State. Later on, May 3, 1826, two years after the incorporation of Madison as a town, a committee was appointed to inquire into the expediency of furnishing the city with water. This resulted in the purchase by the city of private wells and their institution as a source of supply, both public and private. The records show an allowance in 1827 of expense of walling, cleaning and improving the public wells. On January 13, 1830, a notice appears, stating that proposals will be received to bring a sufficiency of water into the town to supply the inhabitants. Protection against fire at this time seems to have been the paramount reason for the urgent demand for a water system, and quantity was especially emphasized. However, in the meantime the town was awake to the protection of the public spring against pollution, as shown by an ordinance passed May 16, 1833, providing as follows: "That it shall be unlawful for any person to wash himself or any other thing, to water horses or cattle of any kind, or commit any act of indecency in or near the public spring." The second and third sections provide a fine of not more than \$20 nor less than 50 cents and the enforcement of the law by the town marshal. A contract was made on November 25, 1834, with John Sheets, granting

exclusive right and privilege of supplying the inhabitants of Madison with water for all purposes. A committee was appointed on July 10, 1837, to inquire into the propriety of accepting the proposition of John Sheets to abandon his contract. August 18, 1837, this same committee was authorized to secure real estate for the purpose of building a water plant and to secure the relinquishment of the John Sheets contract. Considerable and long drawn out discussion ensued, the outcome of which was a proposal submitted by T. J. Godman on November 12, 1846, to furnish the city with water. The Godman agreement was accepted December 19, 1846, and was followed by immediate steps towards its fulfillment. The *Madison Courier* of March 2, 1850, has this to say: "The Messrs. T. J. Godman have laid about 5,000 feet of the indestructible iron water pipe manufactured by Ball & Company, which proves to be the superior pipe represented in an article published by us. The work of laying the pipe to supply the city with pure spring water is progressing very rapidly." It may be of interest to note that the pipe here referred to was replaced in the year 1916 after a service of seventy years.

Brookville had a waterworks system in operation as early as 1820. The town was so situated that the digging of a well was practically an impossibility, therefore the source of supply for domestic purposes was entirely from springs. Fortunately this early settlement was favored with several springs along the west fork of Whitewater, one of these being of unusual magnitude. Carrying and hauling water soon became tiresome to the people, and one of their number devised ways and means for a public supply delivered to their doors. Nature provided the gravity force back of the water, and pipes were constructed of green sycamore saplings of three-inch bore, prepared by William Adams, a practical pumpmaker, for

which work he was paid by the foot. The plant was constructed under the supervision of Messrs. McCarty and Allen, who represented the town. They paid Amos Butler, on whose ground this spring was located, \$500 for the water and also right of way. This seems rather a small sum in this day, yet at the time of purchase—one hundred years ago—it was looked upon as a very large sum indeed. The sapling pipes were laid underground, and a reservoir eight feet in depth was constructed of oak planks. Only one family could boast of having water piped into their home, the balance of the consumers depending on a connection or arrangement of some kind outside of their houses. The story goes that those who lived under the hill and had private wells considered the users of this public supply as aristocrats, and occasionally a stray cat or dog, somewhat the worse for wear, was deposited in the reservoir to portray their feelings. The pipes, as stated, were made of green sycamore and were allowed to lie in the sun for some time previous to their installation, which caused them to split a short time after being in service. Finally, the strong gravity pressure burst the pipes and the plant ceased operation in the early part of 1824. Astonishing to relate, Brookville did not construct a second plant for public supply until 1890, or sixty-six years later.

The *Western Sun*, of Vincennes, dated October 20, 1810, publishes this appeal, evidently from the editor: "The citizens of Vincennes are particularly requested to attend a meeting at the house of Peter Jones, Esq., on Saturday, the 27th inst., for the purpose of making some arrangements for forming a fire company. The importance of this object will, I hope, induce a general attendance." Evidently this meeting did not meet with the success the editor had hoped for, as no volunteer department was organized until 1819, when they were blessed with two companies. Intense rivalry resulted and

when called on to perform their duty, in a great many cases, buildings were allowed to burn down while the rival companies were asserting their rights. In the *Indiana Republican* of Madison, on November 15, 1832, we find an ordinance providing, "That upon fire breaking out within the corporation in the night, the first drayman arriving at the fire with hogshead or barrel filled with water shall receive a reward of \$2.00, and if in the daytime \$1.00 therefor." The remainder of the ordinance provided that all draymen delivering water for the extinguishment of fire should receive for each barrel 12½ cents, and for each hogshead 25 cents.

The first medical society in the State was formed at Vincennes June 2, 1817, being organized in conformity to an Act of the Legislature passed December 24, 1816, entitled "An Act to regulate the practice of physic and surgery." This society was known as a "district society," because it included only a judicial district. What may be taken as the first public health admonition from the organized medical profession of the State is found in the constitution of this first medical society which declared that "Physicians should never neglect an opportunity of fortifying and promoting the good resolutions of patients suffering under the bad effects of intemperance and vicious lives." Singularly enough, the medical profession finds it necessary to cry out against the same physical evils today, after the lapse of a hundred years of progress and education. The first State Medical Society was formed in 1820, at Corydon, the capital of the State. This society was probably short lived, as there is no further reference to it to be found.

In 1845 or 1846 the doctors of Indianapolis organized what was called the Marion County Medical Society, which met once a week at the Old Governor's House, then occupying Governor's Circle, now Monument Place. History records no

public health admonition or scientific discussion emanating from this society, but it is recorded that the members were much given to the consideration of fleshpots and of the contents of sundry black bottles, which may account for the dearth of transactions of a medico-public health nature.

The present Indiana State Medical Society was organized at a medical convention in Indianapolis in June, 1849. At this first convention of the doctors of the State the following resolution was unanimously adopted: "Resolved, That a committee of five be appointed to memorialize the legislature asking them to provide by law for a registration of births, marriages, and deaths." Cholera was at that time raging at New Albany to such an extent as to prevent the delegate from that county, Dr. W. H. Dowling, from attending the convention. "The mills of the gods grind slow." In 1881, thirty-two years after, the legislature enacted the first Vital Statistics law.

At the second meeting of the State Medical Society, in May, 1850, it was "Resolved, That a committee of five be appointed in distant parts of the State, whose duty it shall be to report to the executive committee at least one month before the next annual meeting, all meteorological facts and their connection with epidemics. Resolved, That the executive committee be instructed to frame from the facts a report which may be of general interest."

At the meeting of the State Medical Society in May, 1851, Dr. George Sutton, of Aurora, presented a vivid report of the epidemic of cholera in Aurora and Dearborn county which occurred in 1849. At the beginning of the outbreak he says: "Large fires were made at the corners of streets in the infected portion of the town and cannons were fired every twenty-five minutes for four or five hours. This I have no doubt did harm." He further states that "out of ninety-seven people in

the infected district of Aurora, fifty-one died, while 1600 out of the population of 2000 left the town."

At this meeting of the State Medical Society (1851), it was "Resolved, That, as the responsibilities of the medical profession as conservators of public health, require at their hands all proper efforts to protect the community from the injurious effects of nostrums and patent medicines whose composition and constituent elements are unknown and often unfit to be used; and whereas, this growing evil which is impairing the health and wasting the means of the community can be reached and remedied in no way so well as by legislative enactment; therefore, a committee of seven shall be appointed whose duty it shall be to prepare and present to the legislature a memorial setting forth concisely the evil and dangerous results of the vending and using as medicines, preparations whose constituent parts are unknown, and requesting at their hands such enactment as may compel under penal sanctions, all vendors of secret remedies to append to them a full and true detail of their compound elements."

The belief of the fathers of medicine in Indiana in the efficacy of elaborate resolution seems to have been exceeded only by their childlike faith in the integrity of the legislature. The patent medicine fraud continues to flourish like a green bay tree. A sucker is said to be born every minute, a new patent cure-all appears every week, the supply equals the demand, while the unholy partnership between commercialized medical fraud and the advertising departments of the press, on which the whole miserable fabric rests, continues to extort a constantly increasing toll of "blood money" from the frailty and weakness of humanity.

An advertising page from the *Madison Republican and Banner* of 1834, can scarcely be distinguished from the advertising pages of many newspapers of today, as witness the following patent medicine ads:

F. White's Toothache Drops. "The only specific ever offered to the public." LaMott's Celebrated Cough Drops. "Peculiarly adapted to the present prevailing disorders of the breast and lungs leading to consumption." Dr. Wm. Judkins' Specific Ointment, of which the proprietor says: "I feel grateful in finding myself the instrument and thus handing out such a remedial agent by the effects of which so much human suffering has been erased." Dr. Bloodgood's Elixir of Health. "A universal restorative and better adapted to the constitution of man than any other medicine ever offered to the publick." Extremely interesting is the advertisement of Dr. Andrew S. McCarmic at Vincennes, in 1817, who announced that he would "charge not a cent if he suffers a third chill to take place if his directions are attended to."

An effort to secure a public health and vital statistics law for Indiana was made by the State Medical Society in 1855, but the legislature was too busy with the problems and intricacies of a State banking system. In 1875, a committee was appointed by the State Medical Society to draft a bill for the establishment of a State Board of Health. This bill was introduced in the legislature but failed to pass. Again, in 1877, a similar bill was introduced and again failed to become a law. The State Medical Society then undertook voluntarily the collection of vital statistics throughout the State, and also the collection of facts relative to epidemic and endemic diseases. A State Health Commission was formed with local or district commissions throughout the State to collect vital and sanitary statistics and report the same to the State Commission.

This effort was necessarily incomplete and inaccurate, but speaks eloquently of the unselfish attitude of the organized medical profession toward the larger public good involved in preventive rather than curative medicine.

The first State Health Law, which also provided for the

establishment of a State Board of Health, was enacted by the legislature of 1881. The first meeting of the State Board of Health was held in the office of Governor Albert G. Porter, November 3, 1881, with the following members present: Dr. John W. Compton, Evansville; Dr. Thaddeus M. Stevens, Indianapolis; Dr. J. M. Partridge, South Bend, and Dr. W. W. Vinnedge, Lafayette. Dr. Thaddeus M. Stevens was selected as the first secretary of the board and his salary was fixed at \$1200 per year. Dr. Stevens served as secretary to March 15, 1883, being succeeded by Dr. E. R. Hawn, who served until his death, September 6, 1883. Dr. E. S. Elder served from September 6, 1883, to May 8, 1885; Dr. C. N. Metcalf, from May 8, 1885, to March 10, 1896, when he died. He was succeeded by Dr. J. N. Hurty, who was appointed March 12, 1896, and who will soon round out twenty-five years of faithful and efficient service to the people of Indiana and to the cause of public health.

Public health administration rests upon a three-fold basis: Legislation, organization, and education. Along all these lines much has been accomplished, much more remains. A few years ago the American Medical Association undertook a survey of the activities, equipment and accomplishments of the various State Boards of Health of the United States. Dr. Charles V. Chapin, Health Commissioner of Providence, R. I., and one of the leading sanitarians of the United States, was chosen for this work and made a personal study of each State Board of Health in the Union. The report has this to say in regard to Indiana:

"The department of health in Indiana seems to have kept free from political interference, and its efficient executive has remained in the office for many years and has been able to follow a consistent policy.

"A successful registration of deaths has been developed,

and that of births is rapidly improving and is doubtless over 90 per cent.

"Contagious diseases are still not well reported, though the bacteriologic laboratory has done a good amount of most excellent work.

"A member of the laboratory staff administers antirabic treatment and the cost is defrayed by a portion of the dog tax. Typhoid vaccine is made and distributed, and provision is made for the sale of diphtheria antitoxin at a low price.

"Much educational work has been done in connection with tuberculosis. The State maintains a sanatorium of one hundred beds and has a permissive hospital law for counties.

"The bureau of foods and drugs is well known outside the State for its excellent work against adulteration. Good work has also been done in fighting fraudulent nostrums. A good deal of attention has been given to the sanitation of places where food is prepared and handled. The cold storage law is administered by this department. Some work is being done for the improvement of milk supplies.

"Water and sewage control is under the bureau of food and drugs of this department. Much has been done in the way of inspection and surveys, and improvement in local water supplies has been brought about by advice and orders. The law, however, is not entirely satisfactory, and it does not provide for the filing and approval of plans.

"The educational work of the department is especially prominent and effective. Dr. Hurty has devised many new details which have been copied by others, such as the Governor's letter presenting the 'baby book' to mothers. It is possible, however, that carelessness is sometimes permitted as to subject matter.

"The department has broad powers over the sanitary conditions of public buildings, especially schoolhouses, and during

the past two years a large number of schoolhouses have been condemned and others renovated. It is estimated that nearly \$4,000,000 has been expended in these improvements.

"The department believes, and is doubtless correct, that the chief need at the present time is improvement in local health administration. A bill to secure this failed of passage at the present session of the legislature, but effort should be continued to secure, in one way or another, the needed improvement in the service.

"Meanwhile, the State Board of Health could do much to improve the control of communicable diseases by developing and strengthening the epidemiologic work of the department.

"With sufficient State supervision, a great deal could be accomplished even with the present local health officials.

"A better and more modern water and sewerage law is needed, and it would be wise to establish a division of engineering entirely separate from the food and drugs division."

This is the estimate of an unbiased observer and strikes directly at the weak points in the present system of public health administration in Indiana.

The achievements and discoveries of preventive medicine, since the discoveries of Pasteur, will go down in history as the crowning glory of our time. Typhoid fever is an accurate index of the sanitary civilization of a community, because it is known to be a disease easily preventable by community cleanliness. It has been demonstrated repeatedly that typhoid fever can be almost entirely eradicated from any community by intelligent attention to two points, namely, a good water supply and proper disposal of sewage. Antityphoid vaccination has proven its value as an aid to sanitation.

In 1898, among 10,759 United States soldiers at Jacksonville, there were 2,693 cases of typhoid fever and 248 deaths. In 1911, among 12,801 soldiers at San Antonio there was one

case of typhoid, no death. The difference was due solely to better camp sanitation and compulsory vaccination of all soldiers. The medical and sanitary achievements of the World War are too recent and too well known to require comment. It is interesting to note, however, that in the entire American Army there were fewer than five hundred cases of typhoid fever and less than twenty-five deaths from this cause.

Yellow fever, the scourge of the tropics, has been eradicated wherever intelligent effort has been made to destroy the breeding places of a single species of mosquito (*Stegomyia calopus*) which carries the germs of yellow fever from the sick to the well. Malarial fever is also carried in the same way but by a different species of mosquito (*Anopheles*). The value of these two discoveries was most strikingly illustrated in the construction of the Panama Canal, and it can truthfully be said that the completion of the canal was as much a triumph of preventive medicine as of engineering skill. Ague disappeared from Indiana only with the drainage of swamps and consequent destruction of breeding places of the malaria-carrying mosquito. Bubonic plague has been known as black death and has ravaged Europe, Asia and Africa for centuries. Twenty years ago it was discovered that the germ of plague is carried to man by fleas from rats and certain species of squirrels. Plague has reached the United States three times since this discovery, at San Francisco in 1900, again in 1907, and at New Orleans in 1914. Prompt and intelligent action by health officials exterminated the disease in each case.

Asiatic cholera is spread almost entirely by polluted drinking water. The last serious epidemic in Indiana occurred in 1854. Tuberculosis is a preventable disease. The germ of tuberculosis was discovered in 1882. In Indiana, in 1904, the death rate from tuberculosis was 187 per 100,000. In 1918

the rate was 137.8 per 100,000. This is still far too high, but what has been accomplished proves that a practical application of our knowledge of this disease will bring it more completely under control in the near future. Diphtheria has taken its toll of child life for many years in every part of the world. The germ of diphtheria was discovered in 1883, and this was soon followed by the discovery of diphtheria antitoxin. Before antitoxin practically 50 per cent. of all cases died. At the present time not to exceed 4 per cent. are fatal. Such examples might easily be multiplied almost indefinitely to show the beneficent accomplishments of preventive medicine and efficient public health administration. It can be shown that pellagra and hookworm are well understood and can easily be prevented; that a large proportion of insanity, feeble-mindedness, crime, poverty and moral degeneracy is due to preventable causes, and that all these are in reality problems of public health. The great need in Indiana today is a system of public health administration that recognizes the three basic principles of efficiency, namely legislation, organization, and education. Legislation conferring upon health officials full power to act. Organization with trained health officials giving all-time service in every community. Education in sanitation and prevention that will reach every citizen of the State and challenge his support and co-operation. Lord Beaconsfield said: "The public health is the foundation on which rests the happiness of the people and the power of a country. The care of the public health is the first duty of a statesman."

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